

# Contribution to the knowledge of Eastern African *Amorphoscelis* Stål, 1871, with description of two new species (Dictyoptera, Mantodea, Amorphoscelidae)

by Roger ROY\* & Martin B. D. STIEWE\*\*

\*Muséum national d'Histoire naturelle, Entomologie, C.P. 50, 45 rue Buffon, F – 75231 Paris cedex 05

\*\*10 Westbrook, SL6 2DQ, Berkshire, Bray, United Kingdom

**Summary.** – This work deals with all known Eastern African species of *Amorphoscelis* Stål, 1871, and also contains the descriptions of two new species to science: *Amorphoscelis hamata* Roy n. sp. and *A. kenyensis* Stiewe n. sp. These new species are illustrated and compared to their closest relatives. All other Eastern African species are also pictured. *Amorphoscelis abyssinica* Giglio-Tos, 1914, is now to be treated as a *nomen dubium*. A distribution map and table is provided.

**Résumé.** – Contribution à la connaissance des *Amorphoscelis* Stål, 1871, d'Afrique orientale, avec description de deux nouvelles espèces (Dictyoptera, Mantodea, Amorphoscelidae). Ce travail traite de toutes les espèces d'*Amorphoscelis* Stål, 1871, connues d'Afrique orientale, avec la description de deux espèces nouvelles: *Amorphoscelis hamata* Roy et *A. kenyensis* Stiewe, espèces illustrées et comparées aux plus proches. Toutes les autres espèces d'Afrique orientale sont également figurées. *A. abyssinica* Giglio-Tos, 1914, doit être considérée comme *nomen dubium*. Une carte et un tableau sont présentés pour la répartition des espèces.

**Keywords.** – Dictyoptera, Mantodea, Amorphoscelidae, Amorphoscelinae, *Amorphoscelis*, new species, Eastern Africa.

The Swedish entomologist Carl STÅL (1871) created the genus *Amorphoscelis* and described the first species *A. annulicornis* from India. After the last description of *A. pinheyi* Roy, 2007, from Mozambique, the total amount of known *Amorphoscelis* was 43 species (22 african and 21 asiatic) and is now increased to the total amount of 45 species with the description of the two new species in this paper, but these numbers are always provisional. With this work we also confirm that the genus *Amorphoscelis* is still sorted with the other four genera *Gigliotoscelis*, *Maculatoscelis*, *Bolivaroscelis* and *Caudatoscelis*, all created by Roy, 1973, and living only in Western and Central Africa, under the subfamily Amorphoscelinae and the family Amorphoscelidae.

At the moment only one cretaceous evidence of Amorphoscelidae is known, *Amorphoscelites sharovi* Gratshev & Zherikhin, 1994, from the shale of the Russian Baysa Creek area.

The genus *Amorphoscelis* is widely distributed. It occurs in the Tropical and Southern regions of Africa over to the Middle East and the Oriental region, including New Guinea. All members of Amorphoscelinae are very unique within the order Mantodea as they are characterized by the absence of any spination of the forefemora and foretibiae, apart from one discoidal spine.

This comprehensive study deals with all known Eastern African species of *Amorphoscelis*. For details of what we consider as Eastern Africa for the purposes of this article, see table I and fig. 1. The Eastern African country Djibouti is not included because we did not find any *Amorphoscelis* specimens from this locality.

This work also contains the descriptions of two new species, *Amorphoscelis hamata* n. sp. and *A. kenyensis* n. sp. With these newly described species the total amount of Eastern African *Amorphoscelis* is now eleven. There are six previously known species which are *A. abyssinica* Giglio-Tos, 1915, *nom. dub.* (see explanation below), *A. austrogermanica* Werner, 1923, *A. pulchella* Giglio-Tos, 1913, *A. tuberculata* Roy, 1963, *A. orientalis* Giglio-Tos, 1913, and *A. punctata* Roy, 1962. The three species *A. grisea* Bolívar, 1908, *A. lamottei* Roy, 1963, and *A. tigrina* Giglio-Tos, 1913, are new records for Eastern Africa.

Regarding these three new recorded species, we should mention that we found two species from Uganda in the collection of the Natural History Museum in London, namely one male of *A. grisea* from Western Uganda, and one male of *A. lamottei* from Central Uganda; another male of *A. lamottei* is present in the Philadelphia collection, from the extreme Northwestern Tanzania. These species are usually only known from Western and Central Africa and we believe that Uganda represent the most Eastern distribution for them. Since these specimens are the only ones known from Eastern Africa they are therefore not to be considered as true Eastern African species.

We also detected one specimen of *A. tigrina* from Sudan in the Oxford collection, which is now recorded for this country for the first time. *A. tigrina* was previously known only from Western Africa, and is therefore also not to be treated as a true Eastern African species. The reason we nevertheless included these three species in our study is because there is always a possibility that more specimens of *grisea*, *lamottei* and *tigrina* might be detected from the newly recorded localities.

Furthermore, of the species *A. pinheyi* Roy, 2007, only two specimens are currently known, both from the Chiluvo Hills in Mozambique, *pinheyi* has not been included in our study as an Eastern African species. However, due to the close proximity of the Chiluvo Hills to the Tanzanian border, there is a possibility that this species could also occur in Tanzania.

During the research for this work we found out that the holotype of *Amorphoscelis abyssinica* Giglio-Tos, 1914, is lost. According to the description by Giglio-Tos it should have been deposited in the Budapest Museum (HNHM<sup>1</sup>), however, it was impossible to detect the holotype in the collection. Upon enquiring about it, the responsible curator informed us that the holotype of *A. abyssinica* may have been destroyed during the revolution of 1956. Consequently *A. abyssinica* is now to be treated as a *nomen dubium*. We were unable to design a neotype as all examined specimens (the locus typicus of *A. abyssinica* is Ethiopia) belong to other known species. For instance, after genital examinations it became clear that the two ZSM specimens Beier identified as *A. abyssinica* belong to *A. punctata* and the two male specimens described as *A. abyssinica* by LA GRECA (1952) from the BMNH belong to *A. orientalis*. From the two male *A. abyssinica* specimens LOMBARDO (1997) mentioned as being deposited in the Copenhagen museum, only one specimen in the collection was detectable and in a very bad condition (only present with some body parts and without abdomen) and consequently it is impossible without an examination of the genitals to confirm the identification. Two further *A. abyssinica* specimens from the Copenhagen museum have now been identified as *A. orientalis* and *A. pulchella*. A previously unidentified specimen from this collection is now a paratype of the species *Amorphoscelis kenyensis* n. sp., which is newly described in this article.

Based on the original description by Giglio-Tos it is extremely unlikely that one of the species newly described in this work belong to *A. abyssinica*. If anything, it could be possible that *A. abyssinica* is a synonym of *A. orientalis* and more information on the reasons for this will follow in the article.

Tab. I. – Distributions of Eastern African *Amorphoscelis* species.

	Eritrea	Ethiopia	Kenya	Somalia	Sudan	Tanzania	Uganda
<i>grisea</i>							X
<i>orientalis</i>			X	X		X	
<i>pulchella</i>			X			X	X
<i>tigrina</i>					X		
<i>abyssinica</i> nom. dub.		X					
<i>austrogermanica</i>						X	
<i>punctata</i>	X						
<i>lamottei</i>						X	X
<i>tuberculata</i>						X	
<i>hamata</i> n. sp.			X				
<i>kenyensis</i> n. sp.			X	X			

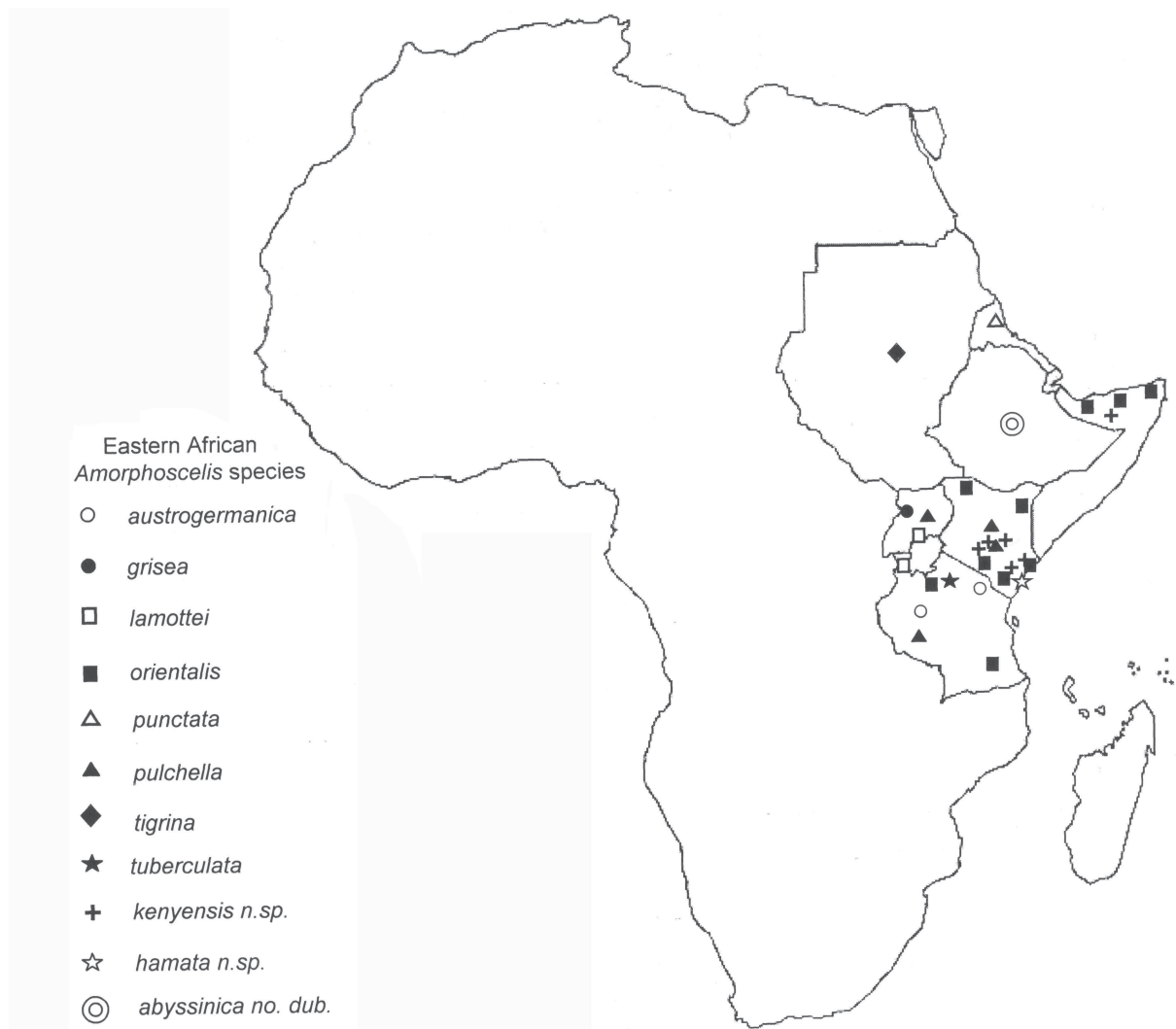


Fig. 1. – Localities of Eastern African *Amorphoscelis* species.

### *Amorphoscelis grisea* Bolívar, 1908 (fig. 2 & 3)

*Amorphoscelis grisea* Bolívar, 1908: 515, fig. 3; GIGLIO-TOS, 1913: 9; 1914: 40; 1927: 26; ROY, 1963a: 173, fig. 4; 1964: 735; 1965: 580; 1968: 320; 1973: 235; ESTEVES & MENDES, 1999: 95, fig. 13; EHRMANN, 2002: 61; OTTE & SPEARMAN, 2005: 23.

**Type material.** – Holotype: ♂, Kamerun, *L. Conradt*, lost.

**East African specimen:** 1 ♂, “Uganda W., Bwamba, Feb-Mar. 57”, *R. Carcasson*, Roy genitalia prep. n° 2933, Nairobi Museum.

The type of *A. grisea* was sent among others by Bolívar to Giglio-Tos who prepared the part of the *Genera Insectorum* relative to Amorphoscelinae, published in 1913. When this work finished, Giglio-Tos probably returned the specimens in loan to Bolívar to the MNMS<sup>1</sup>, as they are not in the Torino collection (PASSERIN D’ENTRÈVES, 1981), but they never came back to their original destination, probably due to the war (C. Martin and V. Llorente, pers. comm.).

Described from Cameroon, this species has been so far recorded from Guinea, Ivory Coast, Gabon and Congo, and we also have seen specimens from Nigeria and of ex-Zaire. Uganda is so far this species’ most Eastern distribution.

<sup>1</sup> **Utilized abbreviations.** – ANSP, Academy of Natural Sciences, Philadelphia; BMNH, The Natural History Museum, London; HNHN, Hungarian Natural History Museum, Budapest; MMUE, Manchester Museum University, UK; MNHN, Muséum national d’Histoire naturelle, Paris; MNMS, Museo nacional de Ciencias naturales, Madrid; NHMW, Naturhistorisches Museum, Vienna; OXUM, Oxford University Museum; TMP, Transvaal Museum, Pretoria; ZMHB, Museum für Naturkunde der Humboldt-Universität, Berlin; ZMUC, Natural History Museum of Denmark, Copenhagen; ZSM, Zoologische Staatssammlung, Munich; ZMUH, Zoologisches Museum und Universität, Hamburg.



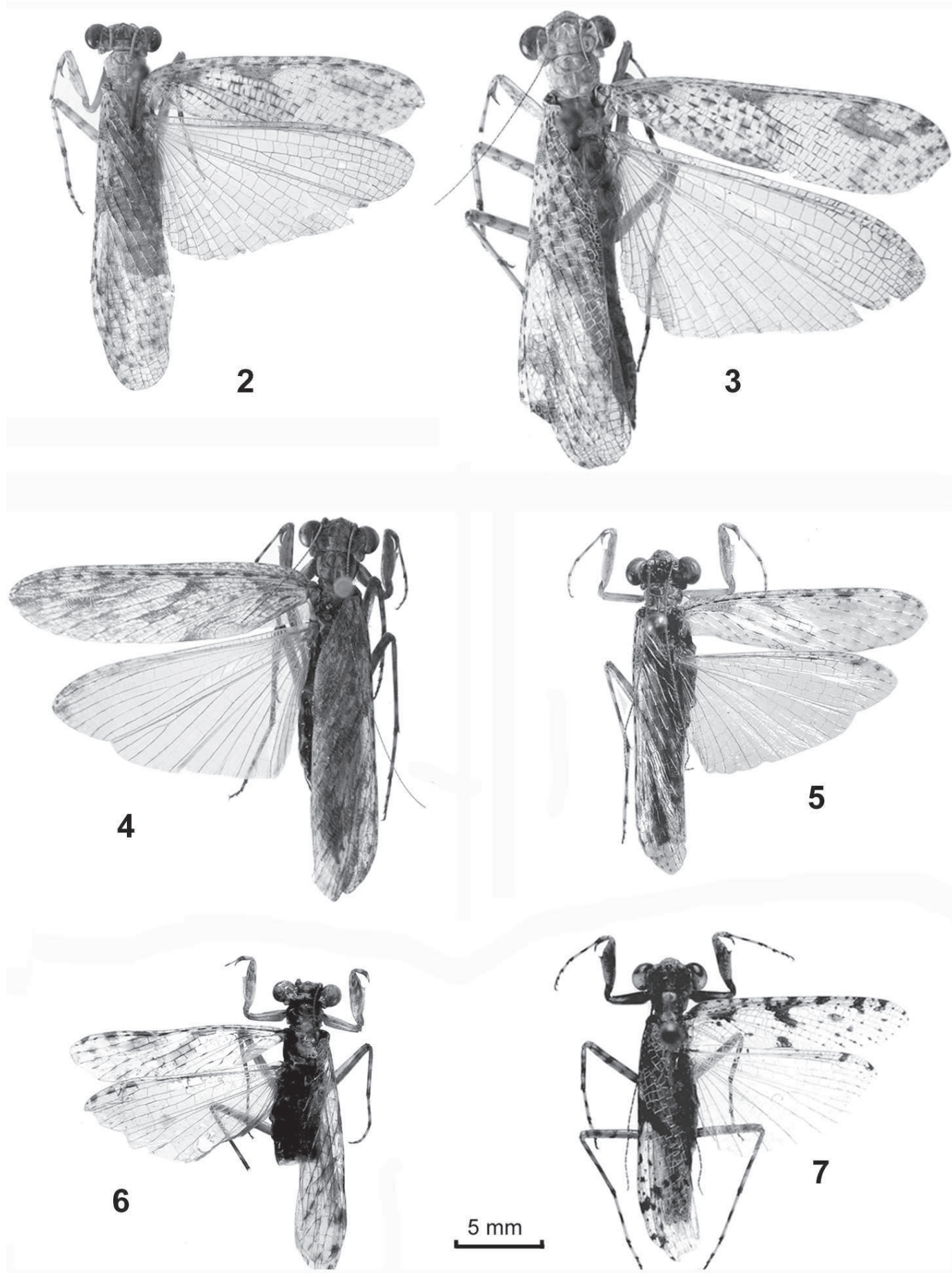


Fig. 2 to 7. – *Amorphoscelis*, habitus. – 2 et 3, *A. grisea* Bolívar, 1908, ♂ and ♀ from La Maboké, Centrafrican Republic (MNHN); – 4, *A. tigrina* Giglio-Tos, 1913, ♀ from Sikasso, Mali (MNHN); – 5, *A. orientalis* Giglio-Tos, 1913, ♂ from Tsavo NP, Kenya (coll. Stiewe); – 6, *A. austrogermanica* Werner, 1923, ♂ from Tabora, Tanzania (BMNH); – 7, *A. pulchella* Giglio-Tos, 1913, ♂ from Nguni/Ngomeni, Kenya (coll. Stiewe). (Photos Legrand & Stiewe).

ROY (1963a) pictured the genitalia with possible variations of their hypophallus. The long apical extension of the hypophallus is characterizing this species. A female is mentioned in ROY (1973) from Gabon without description; the main measurements of another female from Central African Republic are: body-length, 23 mm, forewings, 21 mm, hindwings, 19 mm, pronotum 2.6 mm; width of head, 5.5 mm, of pronotum, 3 mm. The pattern of forewings is quite similar to the one of males.

***Amorphoscelis orientalis* Giglio-Tos, 1913 (fig. 5)**

*Amorphoscelis orientalis* Giglio-Tos, 1913: 10; GIGLIO-TOS, 1914: 41; 1927: 27; ROY, 1962b: 700, fig. 18; ESTEVES & MENDES, 1999: 96, fig. 21; EHRMANN, 2002: 62; OTTE & SPEARMAN, 2005: 24.  
= *Amorphoscelis turkanensis* Chopard, 1938: 107. Synonymy in ROY, 1962b.  
*Amorphoscelis abyssinica*: LA GRECA, 1952: 2; LOMBARDO, 1963: 69 (?).

**Type material.** – Syntypes: 1 ♂, Tanzania (D. Ostafrika), Tendaguru, Lind, S.G. Janensch, Roy gen. prep. n° 73 (ZMHB); 1 ♀, *idem*.

Holotype (*A. turkanensis*): ♂, Kenya, Turkana, partie sud, sables, alt. 800-1000 m, 20.I.1933, Roy gen. prep. n° 75 (MNHN).

**Other East African specimens.** – **Somali:** 3 ♂, British Somaliland, W.A. Macfadyen B.M. 1929-398, Roy gen. prep. n° 1546, 1547 and 1548 (BMNH); 2 ♂, British Somaliland, Hargeisa Locust Camp, 14.X.49, K. M. Guichard, B.M. 1949-612, “*Amorphoscelis abyssinica* G.T. det. La Greca”, Roy gen. prep. n° 65 and 192 (BMNH); 1 ♂, Somali Republic, 3 mls. N. of Shahade, at light, 21-24.V.1961, J. Roffey, Roy gen. prep. n° 1538 (BMNH); 1 ♂, British Somaliland, Bokotlewein, 26.X.1952, P. R. Stephenson, B.M. 1952-641, Roy gen. prep. n° 1540 (BMNH); 1 ♂, British Somaliland, Buran, 3000 ft. 10.15.N - 48.47.E., 24.IX.1929, C. L. Collenette, B.M. 1930-157, “*Amorphoscelis abyssinica* G.Tos det. Beier”, Roy gen. prep. n° 106 (BMNH).

– **Kenya:** 2 ♂ syntypes of *A. turkanensis*, *idem* holotype, one Roy gen. prep. n° 109 (MNHN); 2 ♂, Kenya SC, Tsavo NP, Voi env., leg. Snižek, 16.V.2007 (coll. Stiewe); 1 ♂, Kenya, Coast-Garsen, Witu, 8.IV.2007 (coll. Stiewe); 1 ♂, Kenya, Lake Rudolf, Turkana, 28.V.1954, G. Popov, B.M. 1954-545, Roy gen. prep. n° 1549 (BMNH); 1 ♂, Kenya, Turkana, V.1954, G. Popov, B.M. 1954-544, Roy gen. prep. n° 1544 (BMNH); 1 ♂, Kenya, El Kalulo, Wajir Distr., Desert Grass & Thorn Bush, 02°28'N - 40°38'E, 16.VI.1944, D. K. Kevan coll, B.M. 1953-161, “*A. pallida* G.T. det. Kevan 1950”, Roy gen. prep. n° 338 (BMNH); 1 ♂, *idem*, Roy gen. prep. n° 63 (BMNH); 1 ♂, *idem*, Roy gen. prep. n° 62 (BMNH); 1 ♂, Tana river, R. E. Toker, 6-37, Brit. Mus. 1953-161, “*Amorphoscelis abyssinica* G. T. det. D. K. Kevan 1948”, Roy gen. prep. n° 337 (BMNH); 2 ♂, Kenya, Lenyamu, lumière, 27-28.III.2004, E. Cherlonneix, Roy gen. prep. n° 3964 and 3965 (MNHN).

– **Tanzania:** 1 ♂, Tanganyika: Shinyanga Dist. Old Shinyanga, P. Johanson No, 56, 22.X.1957, det. Lombardo as *A. abyssinica*, Stiewe-genital slide no. A.or.1 (ZMUC); 1 ♂, Tanganyika Terr., Old Shinyanga, at light, 10.VI.1935, E. Burt, B.M. 1938-433, Roy gen. prep. n° 1607 (BMNH); 1 ♂, *idem*, 8.IV.1954, Roy gen. prep. n° 1608; 1 ♂, *idem*, 5.XII.1935 without abdomen; 1 ♂, *idem*, 2.VI.1935, without abdomen.

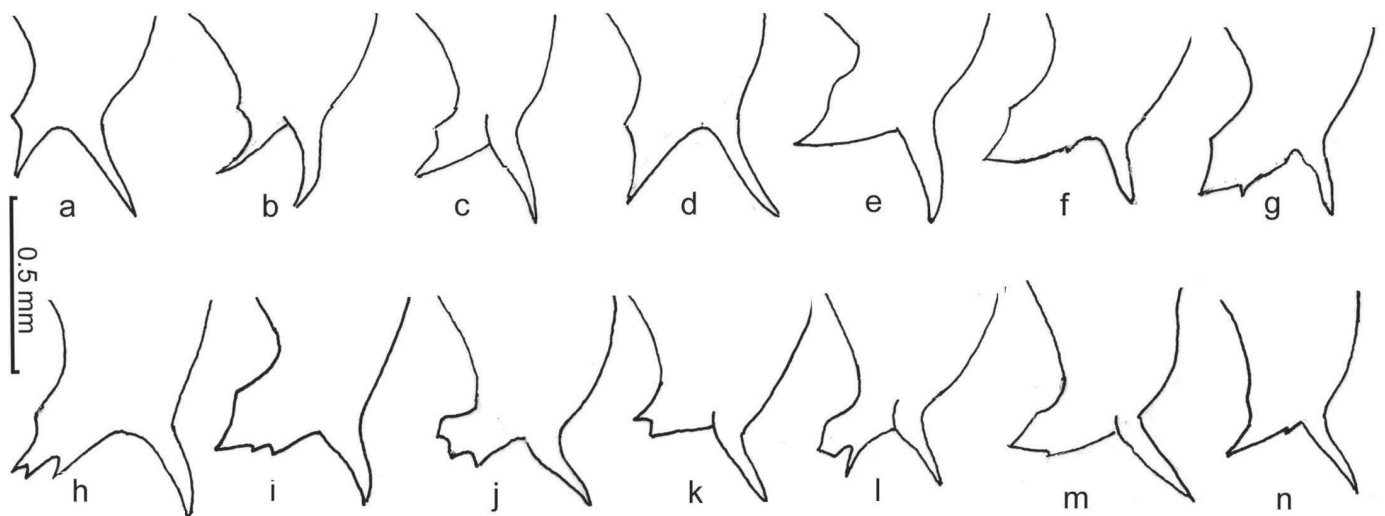


Fig. 8. – *Amorphoscelis orientalis* Giglio-Tos, 1913, variability of the apex of the hypophallus. – a to e, males from Somali (respectively n° 1538, 106, 65, 1540 and 1547); – f and g, males holotype (n° 75) and paratype (n° 109) of *A. turkanensis*; – h to m, other males from Kenya (respectively n° 1544, 1549, 337, 62, 338 and 63); – n, male syntype of *A. orientalis*, from Tanzania (n° 73).



*A. orientalis* is widely distributed in Eastern Africa and not found elsewhere. After an examination of several specimens from different localities, it appears that this species shows the biggest physical variety within Eastern African *Amorphoscelis* species with regard to their habitus coloration, forewing pattern and shape of the hypophallus apex (fig. 8). These variations occur apparently independent of locality.

All other features are fairly constant across all specimens: the shape of the pronotum and the shape of the hunches on it, the head with its round occipital-prolongations, the ocelli shape and ocelli-base. Also very similar to all specimens are the right epiphallus, left epiphallus / titillator with rounded apex and tiny spike, which is sometimes a bit more elongated.

The shape of the hypophallus with its lateral lobe is also a very constant feature, except for the apex with its extension in front of the usually bigger right thorn. The bigger thorn is always developed as a normal thorn, but the extension in front of this thorn can vary from saw-like to a normal shaped thorn.

### *Amorphoscelis pulchella* Giglio-Tos, 1913 (fig. 7)

*Amorphoscelis pulchella* Giglio-Tos, 1913: 10, fig. 6; GIGLIO-TOS, 1914: 30; 1927: 22; ROY, 1962b: 680, fig. 1-2; ESTEVES & MENDES, 1999: 96, fig. 23; EHRMANN, 2002: 62; OTTE & SPEARMAN, 2005: 25.

= *Amorphoscelis ugandensis* Beier, 1931: 359. Synonymy in ROY, 1962b.

*Amorphoscelis ugandanus* [sic]: MARSHALL, 1975: 326; OTTE & SPEARMAN, 2005: 25.

**Type material.** – Holotype: ♀, [Democratic Republic of Congo] Massonso-Landschaft Kombe bis Landschaft Sange, 16.XI.?, *Glauning* (ZMHB).

Holotype (*A. ugandensis*): ♀, Uganda: Kampala, 27.IX.1928, *G.L.R. Hancock*, on *Eucalyptus* (BMNH).

Neallotype: ♂, Angola, Lepi, 3500 ft, 390 km fm Coast, *E. Robins*, B.M. 1912-484, Roy gen. prep. n° 84 (BMNH).

**East African specimens.** – **Kenya:** 1 ♂, Kenya E, Eastern of villages Nguni/Ngomoni between Garissa and Thika, *leg. M. Snižek* 11.V.2007, Stiewe gen. prep. n°Am.p.1 (coll. Stiewe); 1 ♂, Kenya, Isiolo N for Mt Kenya, 21.II.1935, *Dr B. Benzon*, 1/8 1935, det. D.K. McE Kevan as *A. abyssinica*, Stiewe gen. prep. n°Am.pul.2 (ZMUC). – **Tanzania:** 1 ♂, Tanganyika, Kafukola, Rukwa Rift, 24.X.54, *R. F. Chapman*, Brit. Mus. 1960-101, Roy gen. prep. n°1545 (BMNH).

This species is widely distributed in equatorial Africa from Angola to Kenya and Mozambique, and is easily recognizable on the basis of its forewing pattern, which features a blackish stripe that can sometimes be interrupted. Specimens from Western parts of Africa tend to have a more defined stripe. The size of specimens is peculiarly variable, with length of forewings from 12.5 mm to 16 mm for males. Very characteristic is also the hypophallus with its long lateral saber-like appendage and the small distal apical spine (see ROY, 1962b).

### *Amorphoscelis tigrina* Giglio-Tos, 1913 (fig. 4)

*Amorphoscelis tigrina* Giglio-Tos, 1913: 10; GIGLIO-TOS, 1914: 36; 1927: 24; ROY, 1962a: 92, fig. 1; 1962b: 683, fig. 3; 1967: 1538; GILLON & ROY, 1968: 1057, fig. 3; ROY, 1969: 98; 1971: 538; PROST & ROY, 1986: 89; ESTEVES & MENDES, 1999: 96, fig. 27; EHRMANN, 2002: 63; OTTE & SPEARMAN, 2005: 26.

**Type material.** – Holotype: ♂, W. Afrika, Thies, Senegal, VI.1908, *F.W. Riegenbach* S.V (ZMHB), Roy gen. prep. n° 71.

**East African specimen.** – 1 ♂, Sudan, Kordofan El Ain, near El Obeid, 12°54.100'N / 30°34.410'E: Plantation, canopy fogging, *Acacia senegal* ID n°58, 22.X.2000, coll. J.H. Mathews, Stiewe genitalia prep. n°Am.Su.1 (OXUM).

*A. tigrina* was first described from Senegal, where it is the only recorded *Amorphoscelis* species. It is common in the Sudanian part of Western Africa, with specimens recorded from Guinea, Ivory Coast, Burkina Faso, Benin, Nigeria and Cameroon, and is also known by us from Mali. *A. tigrina* is now also recorded from Sudan for the first time, which is so far the most Eastern distribution. It is well described by GIGLIO-TOS (1913) and drawings of the genitals are

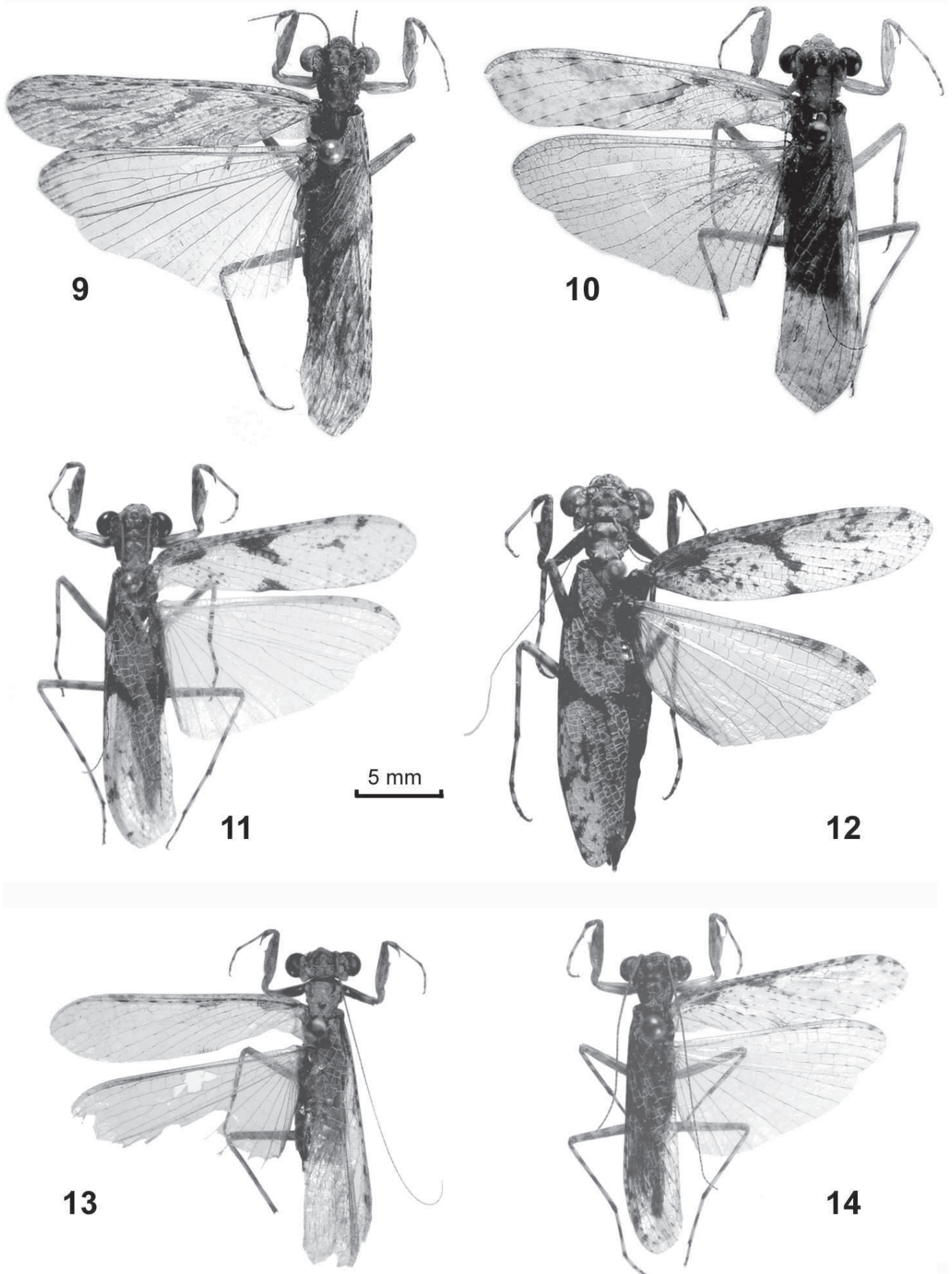


Fig. 9 to 14. – *Amorphaoscelis*, habitus. – 9, *A. punctata* Roy, 1962, ♂ from Af. Abed, Eritrea (ZSM); – 10, *A. lamottei* Roy, 1963, ♂ from Entebbe, Uganda (BMNH); – 11, *A. tuberculata* Roy, 1963, ♂ from Natal, South Africa (coll. Stiewe); – 12, *A. tuberculata* Roy, 1963, ♀ from Uyuzi Hills, Malawi (MNHN); – 13, *A. hamata* Roy n. sp. ♂ holotype from Sokoke Forest, Kenya (BMNH); – 14, *A. kenyensis* Stiewe n. sp., ♂ holotype from Mackinnon Road, Kenya (BMNH). (Photos Stiewe).

pictured in ROY (1962b). Features which characterized *A. tigrina* are the elongated lateral lobe of the hypophallus as well as a short spine and a lateral short angled spine on the apex of the hypophallus. Females are signaled in GILLON & ROY (1968) without description ; their main measurements are (in mm): length of body, 21-22, of forewings 18-19, of hindwings 17-18, of pronotum 2.5; width of head, 5.0-5.1, of pronotum, 2.7. Their pattern is quite similar to those of males.

***Amorphoscelis abyssinica* Giglio-Tos, 1914, *nomen dubium***

*Amorphoscelis abyssinica* Giglio-Tos, 1914: 47. Type material untraceable, probably destroyed.

In the original description by Giglio-Tos from 1914, the locality "Abissinia" is mentioned as the locus typicus, with a single male, and therefore we used only this locality as the possible distribution for *abyssinica* (see tab. I) in this study. All other distributions mentioned in the literature are based on wrongly identified specimens.

***Amorphoscelis austrogermanica* Werner, 1923 (fig. 6)**

*Amorphoscelis austrogermanica* Werner, 1923: 108; KALTENBACH, 1996: 198; 1998: 39, fig. 1, 7 & 11; EHRMANN, 2002: 61; OTTE & SPEARMAN, 2005: 22.

= *A. beieri* Roy, 1962b: 689, fig. 8-10; 1963b: 321, fig. 1 & pl. 14, 1, 2; ESTEVES & MENDES, 1999: 95, fig. 4. Synonymy in KALTENBACH, 1996.

**Type material.** – Holotype: ♂, Roy prep. gen. n° 3175, D.S.W. Afrika, Farm Neitsas im Bez. Grootfontein, Dr G. Fock leg. 07, ded. 20.11.1908 (ZMUH).

Holotype (*A. beieri*): ♂, Roy gen. prep. n° 96, South Africa (Zululand) St. Lucia lake N., oct. 1934, H.W. Bell Marley (NHMW).

**East African specimens.** – **Tanzania:** 1 ♂, Roy gen. prep. n°144, paratype of *A. beieri*, D.O. Afrika, n° 81-61 (NHRS); 1 ♂, Tabora, at light, 12.VI.1967, D.G. Sevastopulo, B.M.1969-44, det. Roy, 1976 as *A. beieri* (BMNH); 1 ♀, Tanganyika Terr, Old Shinyanga, Boma, 4.VI.1935, E. Burt, B.M. 1935-351 (BMNH).

*A. austrogermanica* is mainly distributed in Southern Africa but has also been recorded from Tanzania as its most Northern distribution location. Its most characteristic feature is the genital's hypophallus with a distal double claw (see ROY, 1962b). KALTENBACH (1998) illustrated the head, pronotum and general habitus.

***Amorphoscelis punctata* Roy, 1962 (fig. 9)**

*Amorphoscelis punctata* Roy, 1962b: 685, fig. 4-6; ESTEVES & MENDES, 1999: 96, fig. 25; EHRMANN, 2002: 62; OTTE & SPEARMAN, 2005: 25.

**Type material.** – Holotypus: ♂, "Eritrea, Af. Abed. 7.2.39. Ostafr. Exp.1939", leg. E.v. Saalfeld, det. Beier as *A. abyssinica* (NHMW).

**Other East African specimens.** – 2 ♂, *idem* holotype, det. Beier as *A. abyssinica* (ZSM).

Until now, the holotype has been the only representative of *punctata* and has been well described by ROY (1962b). During our research for this article we detected two more specimens in the Munich collection with exactly the same locality data as the holotype. The apical big sickle-shaped appendage is very characteristic for this species. The female is still unknown.

***Amorphoscelis lamottei* Roy, 1963 (fig. 10)**

*Amorphoscelis lamottei* Roy, 1963a: 173, fig. 6-7, pl. 1a; 1964: 735; 1965: 577; RAGGE & ROY, 1967: 586; GILLON & ROY, 1968: 1058; ROY, 1968: 318; 1973: 235; 1975: 126; ROY & LESTON, 1975: 297; ESTEVES & MENDES, 1999: 95, fig. 15; EHRMANN, 2002: 61; OTTE & SPEARMAN, 2005: 23.

**Type material.** – Holotype: ♂ Nimba (Guinée), Ziela, UV, 28-29.III.1957, Lamotte, Amiet & Vanderplaetsen (MNHN), Roy gen. prep. n° 41.

**East African specimens.** – **Uganda,** 1 ♂, "7 mls from Entebbe, Zika forest, VII.1961. Steel tower, P.S. Corbet, B.M. 1961-341", Roy gen. prep. n°1537 (BMNH). – **Tanzania,** 1 ♂ Mabira (1°14'S - 30°56' E), IX.1920, Roy gen. prep. n° 2650 (ANSP).



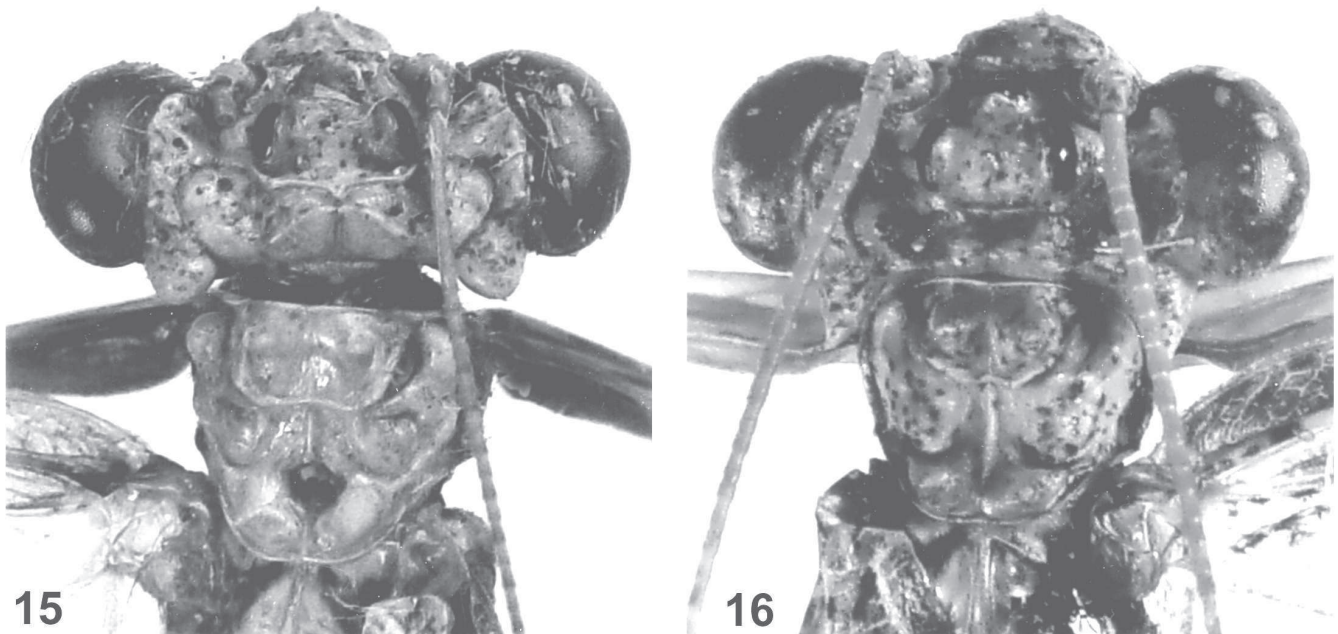


Fig. 15 - 16. – *Amorphoscelis*, dorsal view of head and pronotum. – 15, *A. hamata* Roy n. sp., ♂ holotype from Sokoke Forest, Kenya. – 16, *A. kenyensis* Stiewe n. sp., ♂ holotype from Mackinnon Road, Kenya. (Photos Stiewe).

This species described from Guinea is widely distributed in forestry parts of tropical Africa (Ivory Coast, Ghana, Nigeria, Cameroon, Gabon, Bioko, the two Congo, Centrafrican Republic), and is also recorded from Uganda and Northwestern Tanzania as the Easternmost distribution of this species so far. It is recognizable because of its unique genital shape. The very big juxtaposed sting of the titillator in combination with the two apical spines of the hypophallus are features which characterize *A. lamottei* (see ROY, 1963a).

#### *Amorphoscelis tuberculata* Roy, 1963 (fig. 11 - 12)

*Amorphoscelis tuberculata* Roy, 1963b: 323, fig. 2-3 & pl. 14, 3; KALTENBACH, 1996: 199; ESTEVES & MENDES, 1999, fig. 28 & phot. 1-5; EHRMANN, 2002: 63; OTTE & SPEARMAN, 2005: 26.

*Amorphoscelis tigrina*: GAMBOA AMARAL, 1950: 12 & fig. 1; 1951: 162?

**Type material.** – Holotype: ♂, Transvaal, Shingwedzi, 29.III.1952, Janse & Vari (TMP).

**East African specimen.** – Paratypus, 1 ♂, Tanganyika (Tanzania) Terr., Samba Camp, 20.III.1928, W.H. Potts, B.M. 1928-498 (BMNH).

**Other examined specimen.** – 1 ♀, Malawi, Vwaza marsh R.Uyuzi Hills, 1150 m, 11°08'S.33°06'E, 11.XII.2005, D. Bernaud, Cl. Joly & J. Pierre (MNHN).

*A. tuberculata* is mainly distributed in the South with Tanzania as its recorded Northern most locality. The hypophallus has a spike in front of the right lateral emargination for the long tapered appendage. The males of this species are described by ROY (1963b), KALTENBACH (1996) and ESTEVES & MENDES (1999).

The one examined female is so far the first recorded female specimen of *tuberculata*. That is the reason why we mention this specimen here even though it is from Northern Malawi. It has the typical forewing pattern of this species and also the very well developed big occipital-prolongations of the vertex which are conspicuously tapered. The length of the female's body is 23 mm and the length of the forewings is 17.5 mm.

#### *Amorphoscelis hamata* Roy, n. sp. (fig. 13)

HOLOTYPE, ♂, PARATYPE, 1 ♂: 'Kenya, Sokoke For. White Sand, 8 ml S. of Malindi, 4-1969, M.P. Clifton, BM. 1971- 59', Roy gen. prep. n°2921 and 2397, BMNH and Nairobi Museum.

**Description male** (female unknown). – Length of body (in mm), 19.0-20.5, of pronotum, 2.0-2.1, of forewings, 14.5-15.5, of hindwings, 14.2, of forecoxae, 2.5, of forefemora, 3.2-3.3, of mesofemora, 4.5, of meso-tibiae, 3.0, of meso-basitarsi, 2.2, of metafemora, 5.0, of metatibiae, 5.6, of meta-basitarsi, 2.9. Width of head, 4.5, of pronotum, 2.3-2.4.

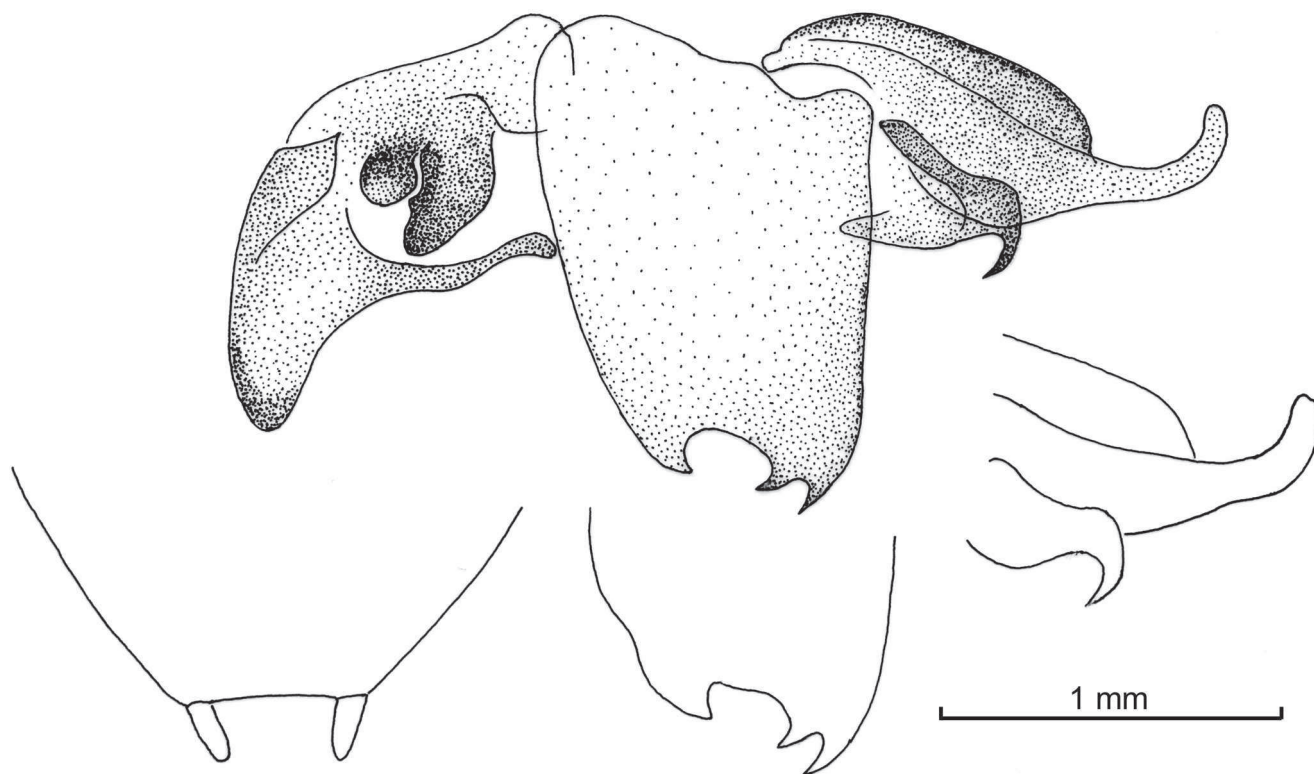


Fig. 17. – *Amorphoscelis hamata* Roy n. sp., subgenital plate of the ♂ holotype, genitalia of the ♂ paratype, ventral view, and variation for the holotype.

**Head.** Testaceous with some small blackish dots; scutellum narrow and very wide, blackish coloration on the top, even; ocelli well developed, protruding, the ocelli-base is spotted with some blackish spots, the ocelli-base is extended over the ocelli and ends in a tip above the upper edge of the ocelli especially the bottom one is pointed; eyes very large and orbicular, with three juxtaocular tubercles on each side, the last one is developed as a spine; occipital-prolongations of vertex well developed and widely rounded. Antennae testaceous, normally shaped, very long.

**Pronotum.** Testaceous and short, pronotum's angles are rounded; metazone longer than prozone, prozone with a pair of slightly pointed hunches, these are a bit apart from each other; metazone with a well developed pair of very pointed shaped hunches (fig. 15).

**Forecoxae.** Dorsally reddish-brown the rest of forecoxa testaceous, the lateral margin with some long hairs, **Forefemora:** inner surface testaceous, the area around the femoral brush is reddish-brown, the femoral's surface with hairs; outer surface testaceous; one short discoidal spine. **Foretibiae:** short with short developed tibial claw, testaceous, medial and apical with a reddish-brown coloration, the first and second segment of foretarsi with reddish-brown coloration at the end.

**Meso and metathoracic legs** with dense short hairs, tibiae and femora with reddish-brown bands. **Forewings** nearly hyaline: narrow semi-hyaline costal area, with some brownish patches, some crotched veins, external margin of costal-area with some short hairs; subcostal vein close to radial vein, radial vein with dark spots, discoidal-area and anal-area hyaline, the discoidal-area shows a basal and medial small brownish coloration. **Hindwings** hyaline, distally somewhat testaceous; costal-area with some vertical veins.

**Abdomen.** Slender, all segments with testaceous surface, lateral margins of segments slightly extended and stepped to the next following segment; subgenital plate with styli, trapezoidal; styli short, posterior edge straight between the styli (fig. 17); last segment of cerci unfortunately absent on both type specimens.

**Genitalia.** The apex of hypophallus has two very close curved sharp prolongations, lateral lobe of hypophallus well developed with pointed apex; titillator of left epiphallus well elongated developed with rounded apex, pseudophallus developed in hook-shaped form.

**Etymology.** – The new species is named after the hook-shape of its genital pseudophallus.

**Diagnosis.** – This new species does not seem to be closely related to any of the known *Amorphoscelis* species. The clearly hook-shaped pseudophallus and the pointed lateral lobe of the hypophallus make this new species unique and allow for easy differentiation from all other *Amorphoscelis* species.

*Amorphoscelis kenyensis* Stiewe, n. sp. (fig. 14)

HOLOTYPE: ♂, Kenya SE, southern of Mackinnon Road, Western of Mombasa, leg. M. Snižek, 12.-14.IV.2007, Stiewe genitalia prep. n°Am.03, BMNH, London.

PARATYPES. – **Kenya**: 10 ♂, Kenya E, Eastern of villages Nguni/Ngomeni between Garissa and Thika, leg. M. Snižek, 11.V.2007: 1 ♂ OXUM (Stiewe genitalia prep. n°Am.02), 1 ♂ ZSM (Stiewe gen. prep. n°Am. 13), 1 ♂ ZMUC (Stiewe gen. prep. n°Am.12), 1 ♂ MNHN (Stiewe gen. prep. n°Am.01), 1 ♂ MMUE (Stiewe gen. prep. n°Am.05), 5 ♂ coll. Stiewe (Stiewe gen. prep. n°Am.17-19); 1 ♂, Kenya SE, southern of Mackinnon Road, Western of Mombasa, leg. M. Snižek, 12-14.IV.2007, coll. Stiewe (Stiewe gen. prep. n°Am.14); 2 ♂, Kenya E, village Sosoma, road E 729, 202 km Eastern of Thika, leg. M. Snižek, 11.V.2007, coll. Stiewe (Stiewe gen. prep. n°Am.15 & 16); 3 ♂, Kenya, Coast NW of Garsen, leg. M. Snižek, 22.IV.2008, 1 ♂ ZMHB (Stiewe gen. prep. n°Am.09), 2 ♂ coll. Stiewe (Stiewe gen. prep. n°Am.08 & 10); 4 ♂, Kenya, Coast E of Garsen, W of Witu, leg. M. Snižek, 21.IV.2008: 1 ♂ MNHN (Stiewe gen. prep. n°Am.06), 1 ♂ BMNH (Stiewe gen. prep. n°Am.07), 2 ♂ coll. Stiewe; 1 ♂, Kenya, Isiolo, plaine bush dense, 4.XII.1972, leg. Michel Boulard, MNHN (Roy gen. prep. n°1929), 1 ♂, *idem*, 4-6.XII.1972, MNHN (Roy gen. prep. n°1930). – **Somali**: 1 ♂, British Somaliland, W.A. Macfadyen B.M.1929-398, BM slide 149, BMNH (Roy gen. prep. n°1539). – **Patria?**: 1 ♂, without locality label, only present in head, thorax, right forewing and abdomen with genital, ZMUC (Stiewe gen. prep. n°Am.20).

**Description male** (female unknown). – Length of body (in mm), 15.7-16.2, of pronotum, 1.65-1.8, of forewings, 13.4-14.5, of hindwings, 12.2-12.6, of forecoxae, 2.5-2.6, of forefemora, 3.6-3.3, of mesofemora, 4.3-4.4, of mesotibiae, 2.9-3.1, of meso-basitarsi, 1.8-1.9, of metafemora, 4.3-4.4, of metatibiae, 4.1-4.3, of meta-basitarsi, 2.5-2.6. Width of head, 4.0-4.2, of pronotum, 1.8.

**Head.** Intensely spotted with blackish dots ; scutellum narrow and very wide, even ; ocelli well developed, protruding, the ocelli-base is extended over the ocelli and ends in a tip above the upper edge of the ocelli ; eyes very large and orbicular ; with three juxtaocular tubercles each side, the last one is developed as a short spine ; occipital-prolongations of vertex very well developed and conspicuously tapered with stepped pointed apex (fig. 16). Antennae normally shaped, very long.

**Pronotum.** Short with small spotted blackish dots, pronotum's angles are rounded ; metazone longer than prozone, prozone with a pair of very well developed tapered hunches, these are very pointy ; metazone with a posterior pair of similar shaped hunches, these are a bit apart from each other, medial line slightly elevated (fig. 16).

**Forecoxae** pale tan, the lateral margin with some short hairs. **Forefemora** : inner surface testaceous, the femoral brush field dark brown, outer surface with some dark brown spots ; one short discoidal spine. **Foretibiae** : short with well developed tibial claw, testaceous, sometimes with some brown spots, the first segment of foretarsi with brownish band at the beginning in the distal half and the end, all following segments only brownish banded at the ends.

**Meso and metathoracic legs.** Tibiae and tarsi are darkly banded, with dense sort hairs ; femora with three indicated brownish bands ; meso-basitarsus a bit longer than following segments combined, meta-basitarsus much longer than following segments combined.

**Forewings** semi-hyaline ; narrow testaceous costal area, with some dark patches, many crotched veins, external margin of costal-area with some short hairs ; subcostal vein very close to radial vein ; discoidal-area and anal-area with some small brownish scattered patches, the discoidal-area with one big basal brownish spot and one big medial more cuneiform brownish spot where the stigma area is, longitudinal veins sporadically brownish spotted. **Hindwings** nearly hyaline, some longitudinal veins with brownish spots ; costal-area with some vertical veins, the apex exhibits some small brownish patches, which sometimes can be very subtle, external margin of costal-area with some short hairs.

**Abdomen** dark brownish surfaces, slender, lateral margins of segments evenly extended and stepped to the next following segment ; subgenital plate (fig. 18) with styli, trapezoidal ; styli short and stub-shaped, posterior edge between the styli somewhat rounded. Supra-anal plate with dense long hairs ; cerci very long and haired, last segment elongated and apically rounded, the interior margin a lot more rounded than the exterior margin.

**Genitalia** (fig. 19). The apex of hypophallus with a very long curved sharp prolongation, which sometimes varies in the strength of its curve ; titillator of left epiphallus well developed, the tip is divided in a short elongated rounded apex, which is sometimes not well developed, and a small tapered spine.



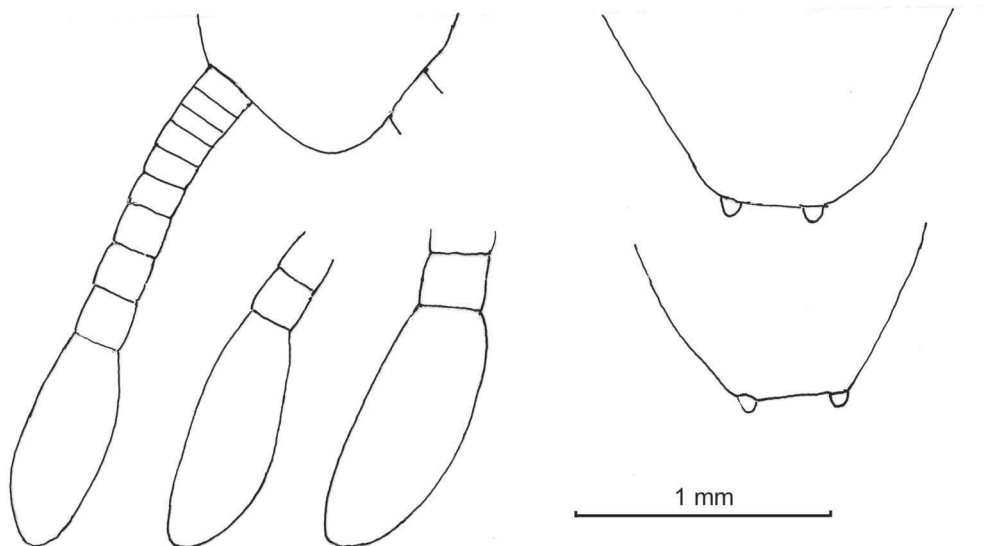


Fig. 18. – *Amorphoscelis kenyensis* Stiewe n. sp., supra-anal plate of the paratype n° 1930 and variation for the cerci of two other paratypes; subgenital plate of the paratype n° 1929 (above) and Am 01.

**Etymology.** – The new species is named after the main distribution area Kenya, as all known specimens of this new species except one (found in Somalia) were collected in Kenya.

**Diagnosis.** – This new species seems to be most closely related to *A. tuberculata*, yet there are striking differences. It is much smaller; the characteristic inner surface of the forefemora in *tuberculata* show a big longish blackish patch and the foretibia a blackish band (see ROY, 1963b, fig. 2); the medial brownish cuneiform spot of discoidal-area of the forewings in *A. kenyensis* is more developed in *tuberculata* as an elongated blackish patch which sometimes reaches the lower discoidal area margin. The last cerci segment of *tuberculata* is not as elongated as is the case with *kenyensis* and it is darker; the styli of *kenyensis* are much smaller than these of *tuberculata*. The most differences become obvious when comparing the genitalia: the hypophallus of *kenyensis* is missing the spike in front of the lateral emargination for the long tapered appendage. The tip of the titillator of *tuberculata* is divided in a big elongated rounded apex and a big dominant tapered sting (see ROY, 1963b, fig. 3) whereas *kenyensis* has a very small spine and the rounded apex is not so elongated and sometimes not even developed.

#### CONCLUSIONS

The genus *Amorphoscelis* Stål, 1871, is now recorded in Eastern Africa with ten sure species. Four of them are only known from this region: *orientalis*, *punctata*, *hamata* and *kenyensis*, the most common being *orientalis*, which exhibits the highest variability in all its characteristics. For this reason to bring a better order into this species, more *orientalis* specimens would be necessary so that sub-patterns within it could be more clearly and reliably identified. Three species are chiefly distributed to the West: *grisea*, *tigrina* and *lamottei*; and three to the South: *pulchella*, *austrogermanica* and *tuberculata*.

In the past, many entomologists have identified *Amorphoscelis* specimens as *abyssinica* without undertaking a genital preparation. Following several genital preparations of those *abyssinica* specimens it has become apparent that many of them have been wrongly identified and most of them actually belong to *orientalis*. There is therefore a possibility that *abyssinica* is a synonym of *orientalis*; however, due to the missing holotype it is impossible to clearly prove whether or not this is the case. For this reason we continue to treat *abyssinica* as a *nomen dubium*.

In order to distinguish *Amorphoscelis* specimens from each other and to identify them correctly, it is necessary to compare the male genitalia. Especially the hypophallus and the shape of the titillator of the left epiphallus are very characteristic for each of the species. These

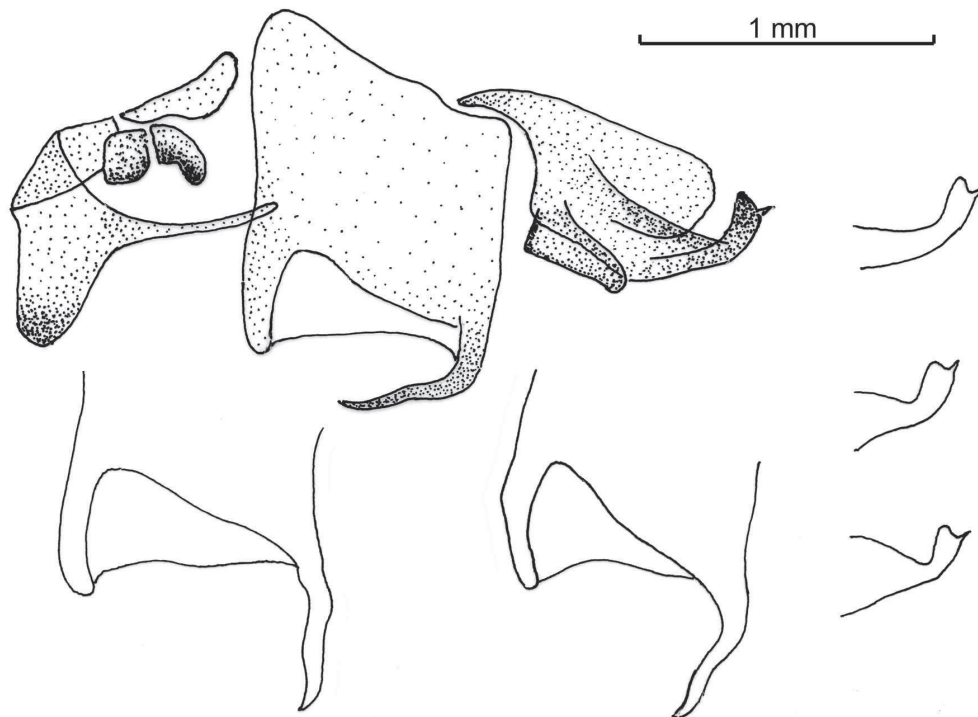


Fig. 19. – *Amorphoscelis kenyensis* Stiewe n. sp., genitalia of the paratype Am 06 (ventral view) and variation for other paratypes.

diagnostical features are usually consistent within the different species and it is only within the species *orientalis* that significant variations can be found.

Further studies of in-culture living *Amorphoscelis* specimens would be necessary to compare genitals of specimens emanating from the same generation to see how varied these diagnostical features can be.

As males tend to be the most commonly found sex among *Amorphoscelis*, not much is known about the different female species and how they can be clearly distinguished. Therefore, when only a female is present and a species has no characteristic wing pattern, conspicuous occipital-prolongations of the head's vertex or different shape of cerci, it will be very difficult to identify this specimen.

We would not recommend the identification of the different species by their geographical distribution as there is a possibility of overlapping habitats of different species, and therefore there is a high risk of misidentifications.

Furthermore, only little is known about the general and sexual behavior of *Amorphoscelis* as well as their preferred food. For this reason, much more studies in the distribution areas would be desirable in order to find out more about these areas. It is also very likely that more new species will be detected in still unexplored territories and we hope that this article will act as an appeal for more *Amorphoscelis* studies.

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**Roger ROY. – Complément de description pour *Amorphoscelis asymmetrica* Ingrisch, 1999 (Dict., Mantodea, Amorphoscelidae)**

*Amorphoscelis asymmetrica* a été décrite d'après deux mâles du Yémen récoltés le 16 novembre 1996 à Wadi Bana (13°09'N - 45°19'E), à 50 km au nord-est d'Aden (INGRISCH, 1999 : 365), et nommée en raison de la plaque sous-génitale asymétrique, ce qui est jusqu'à présent unique chez les *Amorphoscelis*, alors que cela existe dans d'autres genres de Mantes, en particulier *Polyspilota*, *Chlidonoptera* et *Empusa*, de familles différentes. Mais pour ces genres il subsiste toujours deux styles, éventuellement de taille un peu différente, tandis que l'holotype d'*A. asymmetrica* a été trouvé avec un seul style, ce qui serait tout à fait exceptionnel pour une Mante, contrairement aux Blattes, où cela est relativement fréquent. Il est donc permis de se demander si la perte d'un style n'a pas été accidentelle au cours du développement et qu'ensuite une cicatrisation en a fait disparaître toute trace.

Grâce à l'amabilité de Sigfrid Ingrisch, que je remercie pour sa grande patience, j'ai pu examiner le mâle paratype de cette espèce et faire la préparation de l'extrémité de son abdomen (n° 3642). Sur sa plaque sous-génitale, asymétrique comme celle de l'holotype figurée dans la description originale, mais nettement moins, je n'ai trouvé aucune trace de styles, seulement une sorte de repli (fig. 1) à un emplacement qui aurait pu être celui d'un style. De nouveaux spécimens seraient nécessaires pour savoir comment est normalement conformée la plaque sous-génitale chez cette espèce et quelle variation elle peut présenter.

Par ailleurs, comme Ingrisch l'avait déjà remarqué sans les étaler, les genitalia de cette espèce sont sensiblement différents de ceux de toutes les autres espèces d'*Amorphoscelis*, avec l'hypophallus juste terminé par une petite dent dorsale tournée vers la droite, et avec le pseudophallus très allongé (fig. 2) ; cependant l'épiphallus droit est tout à fait conforme à celui des autres espèces, et le titillateur a son apex arrondi et sans pointe accessoire comme cela est fréquent pour le genre.

Plus récemment, Reinhard Ehrmann, que je remercie très vivement, m'a fait parvenir une femelle de cette même espèce, désignée ici comme NÉALLOTYPE, récoltée depuis dans une localité très proche de celle dont provenaient les mâles: Al Kowd (13°05'N - 45°22'E), à environ 60 km au nord-est d'Aden, *leg. A. van Harten*, VIII.2000, coll. Staatliches Museum für Naturkunde, Karlsruhe.

Elle est tout à fait conforme aux mâles dans sa morphologie et son système de coloration, mais un peu plus grande avec un corps long de 18,5 mm, des élytres de 15,5 mm et des ailes de 14 mm, les élytres étant de teinte un peu plus soutenue tout en restant assez pâles (fig. 4). Les marques brunes sur les pattes sont conformes. La plaque suranale est en triangle à apex arrondi avec les bords finement ciliés (fig. 3) ; les cerques, malencontreusement mutilés au